

WHAT IS CLAIMED IS:

1. A method for treating diabetes with an integrated glucose sensor and medicament delivery device, the method comprising:

receiving in a receiver a data stream from a glucose sensor, including one or more sensor data points;

calculating medicament therapy responsive to the one or more sensor data points;

validating the calculated therapy based on at least one of data input into said receiver and data obtained from an integrated single point glucose monitor; and

outputting validated information reflective of the therapy recommendations.

2. The method according to claim 1, wherein the therapy validation is configured to trigger a fail-safe module, if the validation fails, wherein the user must confirm a therapy decision prior to outputting therapy recommendations.

3. The method according to claim 1, wherein output step includes outputting the sensor therapy recommendations to a user interface.

4. The method of claim 3, wherein the wherein output step includes displaying the sensor therapy recommendations on the user interface of at least one of a receiver and a medicament delivery device.

5. The method according to claim 1, wherein output step includes transmitting the therapy recommendations to a medicament delivery device.

6. The method according to claim 1, wherein output step includes delivering the recommended therapy via an automated delivery device.

7. A method for treating diabetes in a host with an integrated glucose sensor and medicament delivery device, the method comprising:

receiving in a receiver medicament delivery data responsive to medicament delivery from a medicament delivery device;

receiving in a receiver a data stream from a glucose sensor, including one or more sensor data points for a time period before and after the medicament delivery;

determining a host's metabolic response to the medicament delivery;

receiving a subsequent data stream from the glucose sensor including one or more sensor data points; and

calculating medicament therapy responsive to the host's metabolic response to the medicament delivery.

8. The method according to claim 7, wherein the host's metabolic response is calculated using a pattern recognition algorithm.

9. The method according to claim 7, wherein the step of determining a host's metabolic response to medicament delivery is repeated when additional medicament delivery data is received by the receiver.

10. The method according to claim 9, wherein the host's metabolic response iteratively determined for a time period exceeding one week.

11. A method for estimating glucose levels from an integrated glucose sensor and medicament delivery device, the method comprising:

receiving in a receiver a data stream from a glucose sensor, including one or more sensor data points;

receiving in the receiver medicament delivery data responsive to medicament delivery from a medicament delivery device;

evaluating medicament delivery data with glucose sensor data corresponding to delivery and release times of the medicament delivery data to determine individual metabolic patterns associated with medicament delivery; and

estimating glucose values responsive to individual metabolic patterns associated with the medicament delivery.

12. The method according to claim 11, wherein the individual's metabolic patterns associated with medicament delivery are calculated using a pattern recognition algorithm.

13. The method according to claim 11, wherein the step of determining the individual's metabolic patterns to medicament delivery is repeated when the receiver receives additional medicament delivery data.

14. The method according to claim 13, wherein the individual's metabolic patterns are iteratively determined for a time period exceeding one week.

15. An integrated system for monitoring and treating diabetes, the system comprising:

a glucose sensor, wherein the glucose sensor substantially continuously measures glucose in a host for a period exceeding one week, and outputs a data stream, including one or more sensor data points;

a receiver operably connected to the glucose sensor, wherein the receiver is configured to receive the data stream; and

a medicament delivery device, wherein the delivery device is at least one of physically and operably connected to the receiver.

16. The integrated system according to claim 15, wherein the glucose sensor comprises an implantable glucose sensor.

17. The integrated system according to claim 15, wherein the glucose sensor comprises a long-term subcutaneously implantable glucose sensor.

18. The integrated system according to claim 15, wherein the medicament delivery device comprises a syringe detachably connectable to the receiver.

19. The integrated system according to claim 15, wherein the medicament delivery device comprises one or more transdermal patches detachably connectable to the receiver.

20. The integrated system according to claim 15, wherein the medicament delivery device comprises an inhaler or spray delivery device detachably connectable to the receiver.

21. The integrated system according to claim 15, wherein the medicament delivery device comprises a pen or jet-type injector.

22. The integrated system according to claim 15, wherein the medicament delivery device comprises a transdermal pump.

23. The integrated system according to claim 15, wherein the medicament delivery device comprises an implantable pump.

24. The integrated system according to claim 15, wherein the medicament delivery device comprises a manual implantable pump.

25. The integrated system according to claim 15, wherein the medicament delivery device comprises a cell transplantation device.

26. The integrated system according to claim 15, wherein the medicament delivery device is detachably connected to the receiver.

27. The integrated system according to claim 15, wherein the medicament delivery device is operably connected to the receiver by a wireless connection.

28. The integrated system according to claim 15, wherein the medicament delivery device is operably connected by a wired connection.

29. The integrated system according to claim 15, further comprising a single point glucose monitor, wherein the single point glucose monitor is at least one of physically and operably connected to the receiver.

30. The integrated system according to claim 29, wherein glucose sensor comprises an enzyme membrane system for electrochemical detection of glucose the single point glucose monitor comprises an enzyme membrane system for electrochemical detection of glucose.

31. The integrated system according to claim 15, wherein the receiver comprises a microprocessor, and wherein the microprocessor comprises programming for calculating and outputting medicament delivery instructions

32. The integrated system according to claim 31, wherein the microprocessor further comprises a validation module that validates the medicament delivery instructions prior to outputting the instructions.

33. The integrated system according to claim 15, wherein the receiver is configured to receive medicament delivery data responsive to medicament delivery for a first time period from the medicament delivery device

34. The integrated system according to claim 33, wherein the receiver comprises a microprocessor, and wherein the microprocessor comprises programming to determine a host's metabolic response to the medicament delivery by evaluating the sensor data points substantially corresponding to delivery and release of the medicament delivery for the first time period.

35. The integrated system according to claim 34, wherein the microprocessor calculates medicament therapy for a second time period responsive to sensor data and the host's metabolic response to the medicament delivery.

36. The integrated system according to claim 34, wherein the microprocessor comprises programming to estimate glucose values responsive to glucose sensor data and host's metabolic response.